GAMETIX, A NEW SOFTWARE FOR MANAGEMENT OF MCQ DATABASES

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Background: Examination of student's knowledge by application of written or electronic tests is widely used in modern pedagogy. Large collections of examination questions must be managed systematically and securely using dedicated software that allows user to add new questions progressively and to edit these questions written in various MCQ formats. Consecutive creation of question sheets and their publication for printed or electronic delivery is another required feature of such a software. We have coded and practically tested a stand-alone portable application called GaMeTix. In this report we analyze specific features of this application and demonstrate its functionality in practical testing in Histology for medical students.

Methods: The program is created under the .NET framework in the C# language. Database of the test questions is stored in a file encrypted using the symmetric cryptography. Questions and generated tests are stored in UTF-8 format and can be imported or exported from/into various formats. In order to generate tests, one or more databases simultaneously can be used. Access to the program is protected by a username and password. Several user accounts can be created.

Results: The program is composed of five functional units. A Database Management pane provides the key function of this software to add new questions to the database and to categorize them by different criteria (ID number, topic, theme, semester, difficulty level, date of the last usage, frequency of use). A search filter available in this pane is to sort questions according to these criteria. In the Test Generator, some filters can be set to specify the range and the number of questions that should appear in the test. The generator checks whether the selected databases contain sufficient number of the questions for the specified filters and generates the tests. Tests of the same topic can be generated in several versions, each version contains different, randomly selected and differently sorted questions to prevent possible cheating. The generated tests can be exported into the text file format or directly printed. Printing of the test on the printer or into a PDF file is followed by printing of the key to the correct answers for easy evaluation of test results. The saved tests can be also exported into txt and xlsx files for on-paper editing or importing sets of questions into electronic test creators like Articulate Quizmaker 13.

Conclusions: The GaMeTix is a dedicated stand-alone application to manage several databases of MCQs in a secure and portable manner. It provides educators with a simple tool to create sets of examination question sheets with random selection of questions on predefined topics in various MCQ formats. The development of this application still continues according to comments and request of academic users.